Amendments to the Abstract:

Please replace the abstract with the following rewritten abstract:

--A method and system for balancing a rotating machinery that operates at or near resonance during its normal operating speed, and which has three separate shafts whose axes of rotations are not aligned along a common axis of rotation and counterweights connected near the ends of each of the shafts. The method includes obtaining speed and vibration data, by mounting velocity transducers on the machine's inner frame and outer casing. A data acquisition system is used to collect and analyze the speed and vibration data for steady state and transient operations. The method further includes adjusting the counterweights using a predetermined rotor influence coefficient determined experimentally using the same setup of transducers, to reduce vibrations below an acceptable level. The data is collected from measurement locations where the number and positions of the measurement locations are less than and different from the number and locations of the correction planes.--